

*ADDITIONAL*

 **PIONEER**

015

# *Service Manual*

ORDER NO.  
ARP-475-0

FM/AM DIGITAL SYNTHESIZED TUNER

# TX-200Z

ZEZ,  
Z, ZS

| Model       | Power requirement | Destination    |
|-------------|-------------------|----------------|
| TX-200Z/ZEZ | DC 20V/250mA      | West Germany   |
| TX-200Z/Z   | DC 20V/250mA      | General export |
| TX-200Z/ZS  | DC 20V/250mA      | South Africa   |

The basic performance of the model TX-200Z/ZEZ, Z and ZS is the same as the model TX-950/KU. Please refer to the TX-950/KU service manual (ARP-472) with the exception of this service manual. This additional service manual is applicable to the TX-200Z/ZEZ, Z and ZS.

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## 1. SPECIFICATIONS

### FM Tuner Section

|                               |  |
|-------------------------------|--|
| Frequency range               | 87.5MHz to 108MHz                                |
| Usable Sensitivity            | 10.8dBf, IHF (0.95 $\mu$ V/75 $\Omega$ )         |
| 50dB Quieting Sensitivity     |  |
|                               | Mono; 17.2dBf, IHF (2 $\mu$ V/75 $\Omega$ )      |
|                               | Stereo; 38.2dBf, IHF (22.3 $\mu$ V/75 $\Omega$ ) |
| Sensitivity (DIN)             | Mono; 0.8 $\mu$ V/75 $\Omega$                    |
|                               | Stereo; 28 $\mu$ V/75 $\Omega$                   |
| Signal-to-Noise Ratio         | Mono; 80dB                                       |
|                               | Stereo; 76dB                                     |
| Signal-to-Noise Ratio (DIN)   | Mono; 72dB                                       |
|                               | Stereo; 65dB                                     |
| Distortion                    | Stereo; 0.4% (1kHz)                              |
| Alternate Channel Selectivity | 67dB (400kHz)                                    |
| Stereo Separation             | 40dB (1kHz)                                      |
| Frequency Response            | 30Hz to 15kHz $\pm$ 1dB                          |
| IF Response Ratio             | 118dB  |
| Antenna Input                 | 300 $\Omega$ balanced                            |
|                               | 75 $\Omega$ unbalanced                           |

### AM Tuner Section

|                                 |                                   |
|---------------------------------|-----------------------------------|
| Frequency range                 | 530kHz to 1600kHz when 10kHz step |
|                                 | 531kHz to 1602kHz when 9kHz step  |
| Sensitivity (IHF, Loop antenna) | 200 $\mu$ V/m                     |
| Signal-to-Noise Ratio           | 52dB                              |
| Antenna                         | Loop Antenna                      |

### Audio Section

|                          |                     |
|--------------------------|---------------------|
| Output (Level/Impedance) |                     |
| FM (100% MOD) FIXED      | 650mV/1.7k $\Omega$ |
| AM (30% MOD) FIXED       | 150mV/1.7k $\Omega$ |

### Miscellaneous

|                          |                              |
|--------------------------|------------------------------|
| Power Requirements       | DC20V                        |
| Dimensions               | 420 (W) x 60 (H) x 219 (D)mm |
| Weight (without package) | 2kg (4 lb 7 oz)              |

### Furnished Parts

|                                |   |
|--------------------------------|---|
| FM T-type Antenna              | 1 |
| AM Loop Antenna                | 1 |
| Connection Cord with Pin Plugs | 1 |
| DC cord                        | 1 |

## 2. CONTRAST OF MISCELLANEOUS PARTS

The TX-200Z/ZEZ, Z and ZS type are the same as the TX-950/KU type with the exception of the following sections.

| Mark | Symbol & Description                          | Part No.       |                     |                     |                     |
|------|---|----------------|---------------------|---------------------|---------------------|
|      |   | TX-950/KU type | TX200Z/ZEZ type     | TX-200Z/Z type      | TX-200Z/ZS type     |
| ★ ★  | Complex assembly                              | GWM-346        | GWM-347             | GWM-347             | GWM-365             |
|      | LED assembly                                  | non supply     | non supply          | non supply          | non supply          |
|      | Switch assembly                               | AWS-163        | ...                 | ...                 | ...                 |
|      | Fuse (0.8A/125V)                              | AEK-118        | ...                 | ...                 | ...                 |
|      | Front panel assembly                          | ANM-602        | ANM-568             | ANM-568             | ANM-568             |
|      | Knob cap                                      | AAD-778        | ...                 | ...                 | ...                 |
|      | Knob (POWER)                                  | AAC-059        | ...                 | ...                 | ...                 |
|      | Coild spring                                  | ABH-134        | ...                 | ...                 | ...                 |
|      | Connection cord                               | ADE-074        | ADE-044             | ADE-044             | ADE-044             |
|      | DC power cord                                 | ...            | ADE-076             | ADE-076             | ADE-076             |
|      | Operation Instructions (English)              | ARB-602        | ...                 | *RRB-235 or RRB-237 | *RRB-235 or RRB-237 |
|      | Operation Instructions (German)               | ...            | *RRD-068 or RRD-067 | ...                 | ...                 |
|      | Note sheet (English, French, German, Italian) | ...            | ARR-051             | ARR-051             | ARR-051             |
|      | Cabinet bumper                                | AEC-903        | AEC-784             | AEC-784             | AEC-784             |
|      | Packing case                                  | AHE-332        | AHE-373             | AHE-373             | AHE-373             |
|      | AC Power cord                                 | ADG-073        | ...                 | ...                 | ...                 |
|      | Screw (3 x 6)                                 | VMZ30P060FMC   | ...                 | ...                 | ...                 |
|      | (Switch assembly)                             |                |                     |                     |                     |

### \*NOTE:

Since the unit may be sold as a component in combination system including model DC-200Z/DC-201Z and PL-200Z/PL-201Z or DC-100Z/DC-101Z and PL-200Z/PL-201Z, the instruction manual covers those models in combined form. The manual is packaged with models DC-200Z/DC-201Z or DC-100Z/DC-101Z.

RRB-235, RRD-068 ..... DC-200Z/DC-201Z

RRB-237, RRD-067 ..... DC-100Z/DC-101Z

### 3. FOR THE ZEZ AND Z TYPES

#### ELECTRICAL PARTS LIST

##### NOTES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω      56 × 10<sup>1</sup>      561 . . . . . RD½PS 561 J


47kΩ      47 × 10<sup>3</sup>      473 . . . . . RD½PS 473 J

0.5Ω      0R5 . . . . . RN2H 0R5 K

1Ω      010 . . . . . RS1P 010 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ      562 × 10<sup>1</sup>      5621 . . . . . RN½SR 5621 F

- The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.

★★ GENERALLY MOVES FASTER THAN ★



This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

#### Miscellaneous Parts

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | Complex assembly     | GWM-347  |

#### Complex Assembly (GWM-347)

#### SEMICONDUCTORS

| Mark   | Symbol & Description   | Part No.                                      |
|--|--|---|
| ★★   | IC201  | PA3001-A<br>(HA11225)                         |
| ★★   | IC301  | HA12016                                       |
| ★★   | IC401  | LA1247  |
|  ★★ | IC601  | NJM78M13A                                     |
| ★★   | IC701  | TD6104P                                       |
| ★★   | IC702  | TC9157P                                       |
| ★★   | IC703  | TD6301AP                                      |
| ★★   | Q101   | 2SK241-Y                                      |
| ★★   | Q102   | 2SC2786-L                                     |
| ★★   | Q103, Q201   | 2SC2668                                       |
| ★★   | Q104, Q105   | 2SK161-Y                                      |
| ★★   | Q301 – Q303, Q601, Q602, Q606,<br>Q608, Q701, Q702, Q704 – Q707,<br>Q801, Q802 | 2SC1740S<br>(2SC2458)<br>(2SC2603)<br>(JC501) |
| ★★   | Q304, Q605, Q607, Q703   | 2SA933S<br>(2SA1048)<br>(2SA1115)<br>(JA101)  |
| ★★   | Q305, Q306   | 2SK246  |
| ★★   | Q603   | 2SC2705(A)                                    |
| ★★   | Q604   | 2SA1145(A)                                    |
| ★  | D101 – D103  | 1SV147  |
| ★  | D201, D202, D301, D403, D404,<br>D701 – D709, D801, D802                       | 1S1555<br>(US1035)                            |
|  ★  | D302, D606   | S5566   |
| ★  | D401, D402   | SUC321C2/D2-SP<br>(SVC321C2/D2)               |
| ★  | D605   | RD5.6EB<br>(HZ5.6EB)                          |

#### TRANSFORMERS, COILS AND FILTERS

| Mark | Symbol & Description                     | Part No.              |
|------|--|-----------------------|
|      | T101                                     | FM RF transformer     |
|      | T102                                     | FM IF transformer     |
|      | T201                                     | FM DET transformer    |
|      | T401                                     | AM ANT transformer    |
|      | L101                                     | FM ANT coil           |
|      | L102                                     | FM ANT coil           |
|      | L103                                     | FM OSC coil           |
|      | L104, L105, C201, L202,<br>RF choke coil | ATH-049               |
|      | L401                                     | AM OSC coil           |
|      | F201                                     | FM ceramic filter     |
|      | F202                                     | FM ceramic filter     |
|      | F301                                     | Beat eliminate filter |
|      | F401                                     | AM ceramic filter     |
|      |  | ATC-194               |
|      |  | ATE-063               |
|      |  | ATE-052               |
|      |  | ATB-099               |
|      |  | ATC-192               |
|      |  | ATC-193               |
|      |  | ATC-214               |
|      |  | ATB-100               |
|      |  | ATF-119               |
|      |  | ATF-107               |
|      |  | ATF-146               |
|      |  | ATF-133               |

#### SWITCHES

| Mark | Symbol & Description      | Part No.  |
|------|---------------------------|-----------|
| ★★   | S3 – S8,      Tact switch | ASG-711   |
|      | S11 – S13,<br>S15, S16    | (ASG-703) |
| ★★   | S17      Slide switch     | ASH-034   |

**CAPACITORS**

| Mark | Symbol & Description  | Part No.       |
|------|---|----------------|
|      | TC401, TC402 Ceramic trimmer  | ACM-015        |
|      | C601 Electrolytic (2200/35)   | ACH-367        |
|      | C713 Electrolytic (22000/6)   | ACH-243        |
|      | C401  | CCDCH 080D 50  |
|      | C117  | CCDCH 100D 50  |
|      | C115, C404, C717  | CCDCH 150J 50  |
|      | C716  | CCDCH 180J 50  |
|      | C116  | CCDCH 330J 50  |
|      | C101, C102, C105, C106  | CCDRH 390J 50  |
|      | C108  | CCDSL 020C 50  |
|      | C424  | CCDSL 030C 50  |
|      | C109, C111, C112  | CCDSL 050C 50  |
|      | C110  | CCDSL 101J 50  |
|      | C205, C718  | CCDSL 221J 50  |
|      | C119  | CCDTH 180J 50  |
|      | C212  | CCPCH 3R9K 50  |
|      | C425  | CCPSL 101J 50  |
|      | C611  | CEA R47M 50L   |
|      | C207, C211, C306, C312, C313, C702, C709, C711, C712  | CEA 010M 50L   |
|      | C705  | CEA 1R5M 50L   |
|      | C303, C603, C604  | CEA 221M 16L   |
|      | C307, C308  | CEA 3R3M 50L   |
|      | C412, C419, C703  | CEA 330M 16L   |
|      | C301, C302, C414, C415, C613, C701  | CEA 4R7M 50L   |
|      | C213, C311, C607  | CEA 470M 25L   |
|      | C714  | CEA 471M 6L    |
|      | C309, C310, C410, C423  | CKDYB 102K 50L |
|      | C314, C315  | CKDYB 182K 50  |
|      | C317, C318  | CKDYB 561K 50  |
|      | C316  | CKDYB 681K 50  |
|      | C104, C107, C113, C114, C118, C201, C202, C208, C210, C403, C409, C413, C418, C704, C706 – C708 | CKDYF 103Z 50  |
|      | C103, C203, C204, C209, C214, C402, C407, C408, C416, C417, C420, C422, C715, C719              | CKDYF 223Z 50  |
|      | C305, C411, C206, C602, C612, C710  | CKDYF 473Z 50  |
|      | C605, C606  | CKDYX 473M 25  |
|      | C304  | CQSA 102J 50   |
|      | C405  | CQSA 431J 50   |
|      | C421  | CQMA 473J 50   |

**RESISTORS**

*NOTE: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.*

| Mark | Symbol & Description  | Part No.       |
|------|---|----------------|
| ★    | VR301 Semi-fixed  | VRTB6V332      |
| ⚠    | R601  | RS1LMF 151J    |
|      | R608  | RS1LMF 680J    |
|      | R720, R721 Resistor array   | ACN-142        |
|      | R734  | RD1/4PMFL 4R7J |
|      | R308, R310, R311, R402, R415, R602, R605, R702, R710, R724, R728 – R732, R802, R807 | RD1/4PM □□□J   |
|      | Other resistors   | RD1/8PM □□□J   |

**OTHERS**

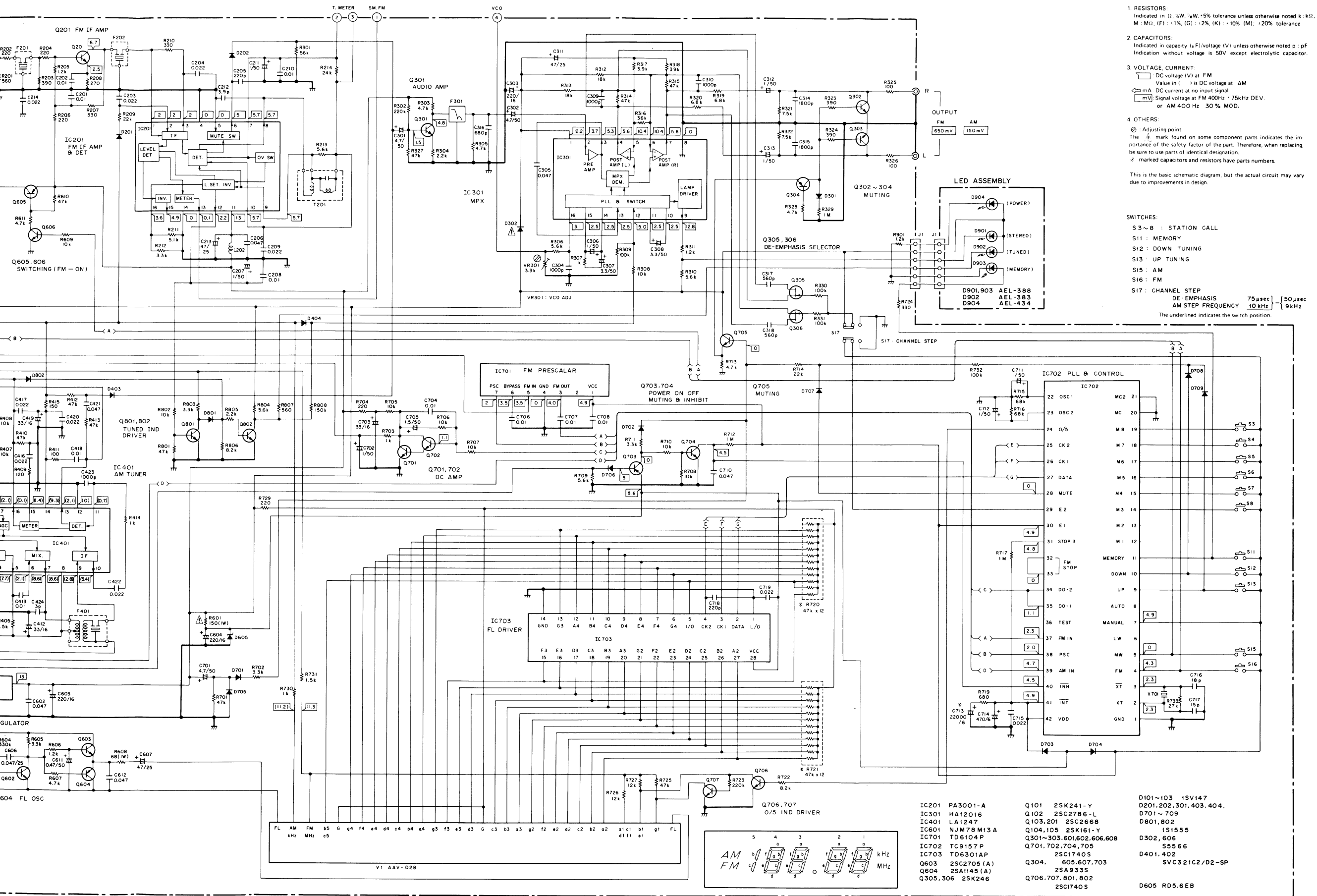
| Mark   | Symbol & Description            | Part No.                |
|--------|---------------------------------|-------------------------|
|        | Terminal (ANTENNA)              | AKA-018                 |
|        | Terminal (OUTPUT)               | AKB-093                 |
|        | Terminal (DC INPUT)             | AKN-203                 |
| ★ V1   | Flourescent display tube        | AAV-028                 |
| ★ X701 | Crystal resonator Screw (3 x 6) | ASS-025<br>PBZ30P060FMC |

**LED Assembly**

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★    | D901, D903 LED (RED) | AEL-388  |
| ★    | D902 LED (GREEN)     | AEL-383  |
| ★    | D904 LED (RED)       | AEL-434  |

1      2      3      4      5      6      7





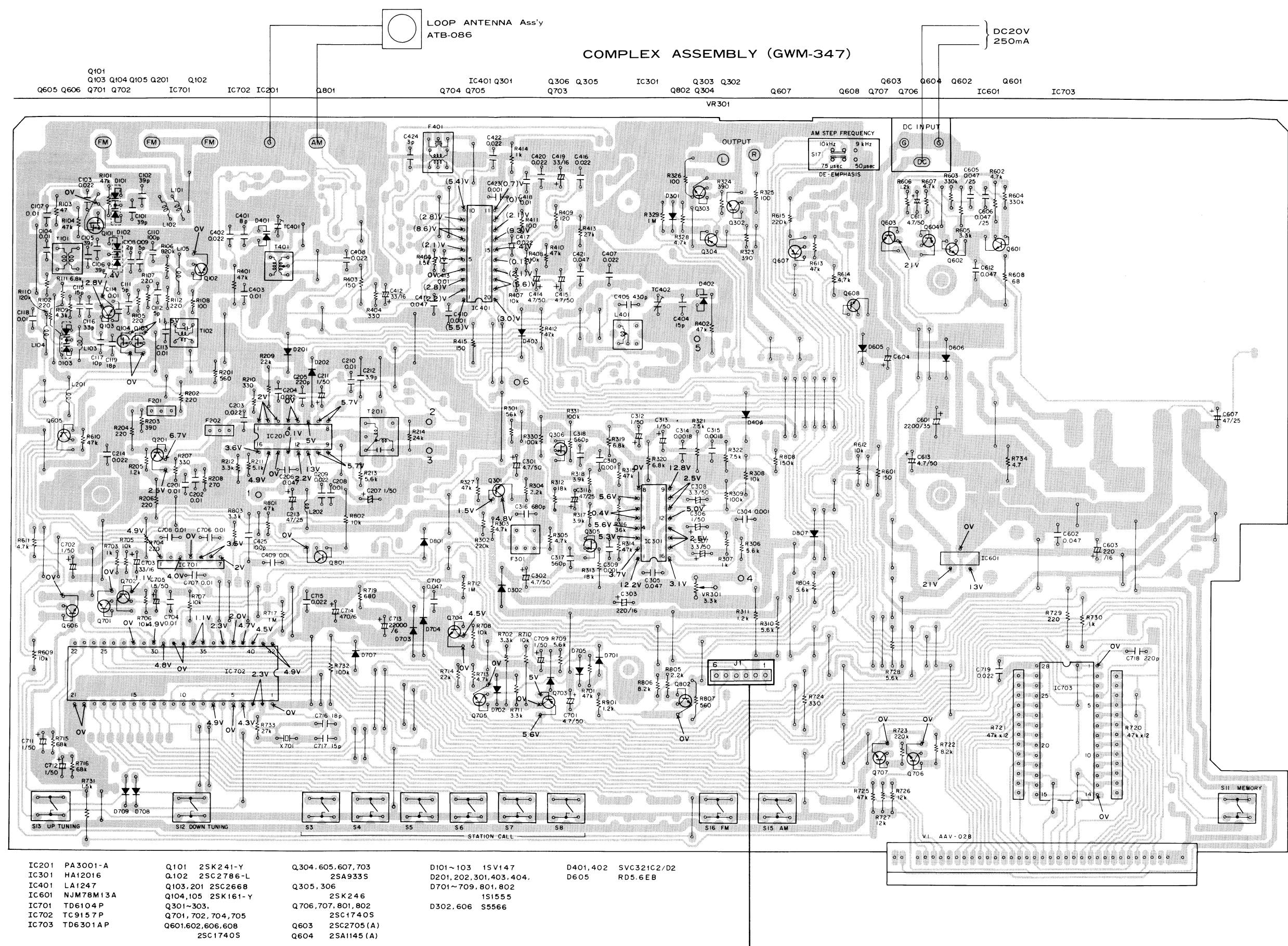
P.C. BOARDS CONNECTION DIAGRAM

A

B

C

D









## 4. FOR THE ZS TYPE

### ELECTRICAL PARTS LIST

#### NOTES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω    56 × 10<sup>1</sup>    561 . . . . . RD½PS 561 J


47kΩ    47 × 10<sup>3</sup>    473 . . . . . RD½PS 473 J

0.5Ω    0R5 . . . . . RN2H 0R5 K

1Ω    010 . . . . . RS1P 010 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ    562 × 10<sup>1</sup>    5621 . . . . . RN½SR 5621 F

- The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.

★★ GENERALLY MOVES FASTER THAN ★


This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.


#### Miscellaneous Parts

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
|      | Complex assembly     | GWM-365  |

#### Complex Assembly (GWM-365)

##### SEMICONDUCTORS

| Mark   | Symbol & Description                | Part No.                                     |
|--|-------------------------------------|--|
| ★★   | IC201                               | PA3001-A<br>(HA11225)                        |
| ★★   | IC301                               | HA12016                                      |
| ★★   | IC401                               | LA1247                                       |
|  ★★ | IC601                               | NJM78M13A                                    |
| ★★   | IC701                               | TD6104P                                      |
| ★★   | IC702                               | TC9157P                                      |
| ★★   | IC703                               | TD6301AP                                     |
| ★★   | Q101                                | 2SK241-Y                                     |
| ★★   | Q102                                | 2SC2786-L                                    |
| ★★   | Q103, Q201                          | 2SC2668                                      |
| ★★   | Q104, Q105                          | 2SK161-Y                                     |
| ★★   | Q301 — Q303, Q601, Q602, Q606, Q608 | 2SC1740S<br>(2SC2458)                        |
| ★★   | Q701, Q702, Q704 — Q707, Q801, Q802 | (2SC2603)<br>(JC501)                         |
| ★★   | Q304, Q605, Q607, Q703              | 2SA933S<br>(2SA1048)<br>(2SA1115)<br>(JA101) |
| ★★   | Q603                                | 2SC2705(A)                                   |
| ★★   | Q604                                | 2SA1145(A)                                   |

| Mark  | Symbol & Description                                  | Part No.                        |
|---|---|---------------------------------|
| ★   | D101 — D103   | 1SV147                          |
| ★   | D201, D202, D301, D403, D404, D701 — D709, D801, D802 | 1S1555<br>(US1035)              |
|  ★ | D302, D606  | S5566                           |
| ★   | D401, D402  | SUC321C2/D2-SP<br>(SVC321C2/D2) |
| ★   | D605  | RD5.6EB<br>(HZ5.6EB)            |

##### TRANSFORMERS, COILS AND FILTERS

| Mark | Symbol & Description                 | Part No. |
|------|--------------------------------------|----------|
|      | T101 FM RF transformer               | ATC-194  |
|      | T102 FM IF transformer               | ATE-063  |
|      | T201 FM DET transformer              | ATE-052  |
|      | T401 AM ANT transformer              | ATB-099  |
|      | L101 FM ANT coil                     | ATC-192  |
|      | L102 FM ANT coil                     | ATC-193  |
|      | L103 FM OSC coil                     | ATC-215  |
|      | L104, L105, L201, L202 RF choke coil | ATH-049  |
|      | L401 AM OSC coil                     | ATB-100  |
|      | F201 FM ceramic filter               | ATF-119  |
|      | F202 FM ceramic filter               | ATF-107  |
|      | F301 Beat eliminate filter           | ATF-146  |
|      | F401 AM ceramic filter               | ATF-133  |

##### SWITCHES

| Mark | Symbol & Description                     | Part No.             |
|------|--|----------------------|
|      | S3 — S8, S11 — S13, S15, S16 Tact switch | ASG-711<br>(ASG-703) |

**CAPACITORS**

| Mark | Symbol & Description  | Part No.      |
|------|---|---------------|
|      | TC401, TC402 Ceramic trimmer  | ACM-015       |
|      | C601 Electronic (2200/35)   | ACH-367       |
|      | C713 Electronic (22000/6)   | ACH-243       |
|      | C401  | CCDCH 080D 50 |
|      | C117  | CCDCH 080D 50 |
|      | C115, C404, C717  | CCDCH 150J 50 |
|      | C716  | CCDCH 180J 50 |
|      | C116  | CCDCH 330J 50 |
|      | C101, C102, C105, C106  | CCDRH 390J 50 |
|      | C108  | CCDSL 020C 50 |
|      | C424  | CCDSL 030C 50 |
|      | C109, C111, C112  | CCDSL 050C 50 |
|      | C110  | CCDSL 101J 50 |
|      | C205, C718  | CCDSL 221J 50 |
|      | C119  | CCDTH 120J 50 |
|      | C212  | CCPCH 3R9K 50 |
|      | C425  | CCPSL 101J 50 |
|      | C611  | CEA R47M 50L  |
|      | C207, C211, C306, C312, C313, C702, C709, C711, C712  | CEA 010M 50L  |
|      | C705  | CEA 1R5M 50L  |
|      | C303, C603, C604  | CEA 221M 16L  |
|      | C307, C308  | CEA 3R3M 50L  |
|      | C412, C419, C703  | CEA 330M 16L  |
|      | C301, C302, C414, C415, C613,   | CEA 4R7M 50L  |
|      | C701  |               |
|      | C213, C311, C607  | CEA 470M 25L  |
|      | C714  | CEA 471M 6L   |
|      | C309, C310, C410, C423  | CKDYB 102K 50 |
|      | C314, C315  | CKDYB 182K 50 |
|      | C316  | CKDYB 681K 50 |
|      | C104, C107, C113, C114, C118, C201, C202, C208, C210, C403, C409, C413, C418, C704, C706 – C708 | CKDYF 103Z 50 |
|      | C103, C203, C204, C209, C214, C402, C407, C408, C416, C417, C420, C422, C715, C719              | CKDYF 223Z 50 |
|      | C206, C305, C411, C602, C612, C710  | CKDYF 473Z 50 |
|      | C605, C606  | CKDYX 473M 25 |
|      | C421  | CQMA 473J 50  |
|      | C304  | CQSA 102J 50  |
|      | C405  | CQSA 431J 50  |

**RESISTORS**

**NOTE:** When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

| Mark | Symbol & Description  | Part No.       |
|------|---|----------------|
| ★    | VR301 Semi-fixed  | VRTB6VS332     |
|      | R720, R721 Resistor array   | ACN-142        |
|      | R601  | RS1LMF 151J    |
|      | R608  | RS1LMF 680J    |
|      | R734  | RD1/4PMFL 4R7J |
|      | R308, R310, R311, R402, R415, R602, R605, R702, R710, R724, R728 – R732, R802, R807 | RD1/4PM □□□J   |
|      | Other resistors   | RD1/8PM □□□J   |

**OTHERS**

| Mark | Symbol & Description        | Part No.     |
|------|-----------------------------|--------------|
|      | Terminal (ANTENNA)          | AKA-018      |
|      | Terminal (OUTPUT)           | AKB-093      |
|      | Terminal (DC INPUT)         | AKN-203      |
| ★    | V1 Fluorescent display tube | AAV-028      |
| ★    | X701 Crystal resonator      | ASS-025      |
|      | Screw (3 x 6)               | PBZ30P060FMC |

**LED Assembly**
**SEMICONDUCTORS**

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★    | D901, D903 LED (RED) | AEL-388  |
| ★    | D902 LED (GREEN)     | AEL-383  |
| ★    | D904 LED (RED)       | AEL-434  |



